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## **Using practice-led research for advancing sustainability transitions in the built environment.**

The environmental and social challenges humanity is facing today will require a variety of shifts, also called socio-technical transitions, to new kinds of energy, mobility, housing, and food systems. These transitions involve not just changes in technology but also changes in consumer practices, policies, cultural meanings, infrastructures, and business models. (Geels, 2018) A new emerging field of 'design for sustainability transitions' aims at providing the theoretical background for such systemic transitions in design, and can be equally applicable to the built environment.

The architecture firm Pir II AS has recently established an R&D unit for innovation with a focus on sustainability transitions. A doctoral dissertation based on action research, and more specifically practice-led research methodology, will allow to explore and define the possible framework for such an R&D unit. The aim of the work is to customise the practice-led research methodology to best fit the purpose of advancing both theoretical and practical knowledge with efficient feedback loops between them. A practice-led research method is seen as very relevant since it is concerned with the nature of practice and leads to new knowledge that has operational significance for that practice. (Candy, 2006) The chosen methodology should also allow for iterative, open-ended processes, and accommodate insights resulting from unexpected outcomes of action. (Stapleton, 2005)

Research methodology for the dissertation will combine design approaches relevant for sustainability transitions in the built environment developed from the literature review with a practice-led research by implementing and testing selected approaches by the author in a variety of design tasks in the company during the dissertation period. Due to a large variety of possible design tasks linked to the built environment (from designing a single building to the process design of co-creating desirable futures), there is a need for flexible modes of investigation and data collection. A common framework for analysing the different projects can come from action research process characterized by cycles of action and research consisting of four phases: plan – act – observe – reflect. (Zuber-Skerritt, 1992)

The aim of this practice-led research is to gradually transform practice (Pir II AS) to accommodate for sustainability transitions in the built environment through accumulated theoretical knowledge and an iterative process whereby both quantitative data and qualitative data collected through reflective practice (Schön, 1983) on the earlier design tasks will inform further development of the selected design approaches.